it should be prepared to prevent such efforts to evade rate regulation through unjustified price increases by vertically integrated cable programmers.[26/]

Conclusion

The Commission should adopt NAB's hybrid model for regulating basic tier cable rates because it would best achieve Congress' objectives of establishing an efficient mechanism to extract the monopoly rents currently included in most cable rates, while not unduly inhibiting or reducing cable's incentives to provide diverse quality programming and service.

Regardless of what scheme is adopted for regulating basic tier rates, retransmission consent costs should be treated no differently than those of cable programming services. In applying the principle to the adoption of any rate-based benchmark approach, rates used to establish such benchmarks must be discounted in an amount equal to the value which cable already receives for the retransmission of broadcast signals but which, heretofore, it has not been required to convey to the owners of those signals.

The Act requires that the basic tier include "any signals of any television station" carried by a cable system except for superstations. There is no basis for exempting from carriage on the basic tier distant stations or those opting for retransmission consent. Moreover, the Act's requirement that must carry signals must "be

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26/ In its form for the Annual Report of Cable Television Systems, the Commission may want to require reporting for specific programming services, both vertically integrated and independent services both. This would provide data for the Commission to detect these cable program pricing anomalies.

provided to every subscriber of every cable system," precludes à la carte offerings that could be purchased without subscribing to the basic tier.

In order for a video service to qualify as a multichannel video programming distributor deemed to provide effective competition to an existing cable system, such service must "offer comparable video programming," which includes programming comparable to all video services offered by the cable system, not just that provided on the basic tier. Television stations which might, in the future, provide limited multichannel services would not qualify under this standard.

Respectfully submitted,

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APPENDIX A

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EFFICIENT REGULATION OF BASIC-TIER CABLE RATES©

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JANUARY 26, 1993

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EFFICIENT REGULATION OF BASIC-TIER CABLE RATES

BY

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In its implementation of the basic-tier rate regulation provisions of the 1992 Cable Act, the FCC must develop a method which effectively controls cable's monopoly power and can be administered by the Commission and local governments with their limited resources.

Because cable rates embody substantial monopoly rents, it is unlikely that rate-based benchmarks can protect the interests of consumers in a manner intended by Congress. There are few markets in which cable companies compete directly or where cable faces effective competition from some other multichannel video programming delivery system. Thus, the Commission is unlikely to find a sufficiently diverse sample on which to base a meaningful benchmark. Moreover, cable companies may be able to game a rate-based benchmark by strategically manipulating rates (e.g., raising prices in sample markets and offsetting the lost revenue in those markets with price and revenue increases in "noncompetitive" markets under the skewed benchmark).

While the Commission wisely desires to avoid the *process* of cost-of-service regulation, it should adopt a method which will produce efficient cost-based prices. That is what an effective competitive process would produce.

We propose an efficient method of cost-based regulation which relies upon benchmarking for capital costs using replacement costs (i.e., the costs to replace existing plant with new plant that could perform the same functions) as a standard. These costs would be recovered on a per-channel basis. Estimates of replacement costs are readily available to the Commission, and it would be relatively easy for the Commission to refine these estimates based on different categories of cable systems (e.g., number of channels, whether plant is buried or aerial plant, etc.) Once the Commission has made these refinements, this method could be economically administered by local governments. A capital-cost benchmark would also be relatively difficult for cable companies to game, especially since the costs are largely fixed and technical quality of cable service can be easily monitored.

Benchmarking variable costs (e.g., program or customer service costs) is much more difficult precisely because these costs *are* variable. If the Commission were to adopt an average variable-cost benchmark, there would be strong incentives to substitute low-cost (and

low-quality) programming for high-cost programming and poor service for good service. Plainly, this outcome would not benefit consumers. We, thus, recommend allowing cable companies to recover their *actual* noncapital costs. This would avoid creating incentives to degrade the quality of basic service. This approach would entail simple data submissions by cable operators to local authorities and spot-monitoring to ensure compliance.

"Back-of-the-envelope" calculations using simple average statistics suggest that in average circumstances basic service can be supplied for about **$4.50** per month. This figure can be compared with the **$10.00**-per-month basic-service package which is currently being implemented by TCI.

Our proposed approach would be easy and economical to administer. It permits cable companies to recover their relevant costs and gives them efficient incentives to continue to invest. Consumers would see substantially lower rates for basic cable service without degradation in the quality of the programming offered on the basic tier.

EFFICIENT REGULATION OF BASIC-TIER CABLE RATES

BY

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I. INTRODUCTION

The Commission confronts a difficult challenge in implementing the rate regulation provisions of the 1992 Cable Act. Congress has charged the Commission to undertake a demanding task, but the Commission is operating under a tightly binding resource constraint. In addition, the local governments which will actually be administering the regulatory scheme adopted by the Commission also have only limited resources. In this situation, the Commission naturally seeks ways to minimize the costs of regulation by synthesizing alternatives to traditional methods of regulation that will produce acceptable results, but consume far fewer scarce regulatory resources than conventional approaches would. Conventional approaches are, of course, themselves imperfect. Moreover, since their application to the task of regulating cable monopoly power is infeasible in any event given the resource constraint, they cannot be optimal from an economic standpoint.[1]

The purpose of this submission is to offer the Commission some economic input about how to regulate basic-service tier cable rates in an economically efficient way. In its Notice, the Commission has set out a variety of alternative approaches to solution of this problem, all with different pluses and minuses from the standpoint of efficient performance. The Commission recognizes that devoting limited resources to regulation may impair regulatory performance, but the performance tradeoffs involved in adopting different methods of regulation

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[1]As William Baumol observed many years ago, "If it ain't feasible, it can't be optimal."

can vary considerably. Some methods may save a lot, but sacrifice a lot also. Others may be hard to implement and produce little benefit. Both of these are outcomes the Commission would presumably prefer to avoid. The Commission's goal should be to find a method which maximizes performance consistent with the need to do a lot with a little.

Our analysis of alternatives leads us to conclude that a method that utilizes cost benchmarking to estimate capital costs for cable systems of different sizes and types, but allows for recovery of actual costs of variable (noncapital) inputs, would best meet the Commission's goal. Benchmarking of capital costs can provide a reasonably close measure of economically relevant costs and can be implemented cost-effectively. Moreover, this kind of benchmark would be difficult for cable system operators to game by degrading the technical quality of their networks. Benchmarking the costs of variable inputs would, in contrast, pose several problems. Benchmarking the costs of variable inputs is inherently more difficult and could be only crudely implemented at low costs. Most importantly, any crude variable-cost benchmark could be easily gamed (i.e., outsmarted through calculated behavior) and, therefore, permit regulation to be effectively evaded. Precisely because variable costs are variable, operators can avoid the onus of a variable-cost benchmark by eliminating program services, reducing programming quality and degrading customer service. More "flexible" variable-cost benchmarking can mitigate but not eliminate incentives and opportunities for cable operators to harm consumers by evading regulatory controls on their monopoly power. Thus, taking into account actual costs of variable inputs would substantially enhance regulatory performance without, as we demonstrate, creating unacceptably high regulatory costs.

Our comments are organized as follows: Section II discusses the problem of cable monopoly power and the efficacy of various alternative approaches to its control on an economic basis. In Section III, we discuss a hybrid proposal which melds attractive features of several alternative approaches and will in practice produce efficient results. We describe how this approach would be implemented, illustrate its application and describe potential pitfalls. Section IV summarizes our analysis and recommendations.

II. THE PROBLEM AND THE COMPARATIVE EFFICACY OF ALTERNATIVE SOLUTIONS

The problem the Commission confronts is how, with limited resources, to regulate the monopoly power currently exercised by cable television system operators. There is compelling economic evidence that cable system operators possess a high degree of monopoly power.[2] Cable's monopoly power over consumers is evidenced by market valuations of cable systems that exceed their replacement costs by an average multiple of approximately three.[3] High market valuations relative to replacement costs may reflect several different factors. For example, they may reflect the fact that, historically, cable system operators have been able to appropriate rents from retransmitting valuable broadcast signals without compensating broadcasters for costs incurred. The prices cable systems charge and the profits cable systems earn, thus, in part, reflect the value of those broadcast signals.[4] But uncompensated retransmission is only part of the story; exploitation of monopoly power is a key contributing factor.[5]

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[2]See, generally: FCC *Report* in MM Docket 89-600, *In the Matter of Competition, Rate Deregulation, and the Commission's Policies Relating to the Provision of Cable Television Service* (adopted July 26, 1990, released July 31, 1990), Department of Justice *Comments* filed in MM Docket 89-600, Paul W. MacAvoy, *Tobin's q and the Cable Industry's Market Power* (1990), Appendix 5 to United States Telephone Association (USTA) *Comments*, filed March 1, 1990 in Docket No. 89-600, and Paul W. MacAvoy, *Reply to Comments Filed by the National Cable Television Association and Adelphia Communications Corporation, et al.* (April 2, 1990). For earlier discussions of cable market power, see: Shooshan & Jackson Inc., "Measuring the Market Power of the Cable Television Industry," included in USTA *Comments* before the FCC in Connection with Telephone Company/Cable Television Cross-Ownership Rules, Sections 63.54-63.50, CC Docket 87-266, November 1987, and Shooshan & Jackson Inc., "Measuring Cable's Market Power: Recent Developments," Appendix A, prepared for USTA, December 1988.

[3]Common sense suggests that if someone could duplicate a valuable asset at a cost substantially less than its valuation, someone would — absent a constraint or barrier to so doing. In economics, the ratio of an asset's market value to its replacement costs is referred to as (Tobin's) "q." On the use of q ratios as a measure of market power, see Eric Lindenberg and Stephen Ross, "Tobin's *q* ratio and Industrial Organization," *Journal of Business*, 54, January 1981, pp. 1-32; as well as MacAvoy (1990), and Shooshan & Jackson (1987 and 1988).

[4]Under the Cable Act of 1992, broadcasters are now afforded the opportunity to negotiate a payment for rights to retransmission of their signals. If broadcasters are able to negotiate actual compensation, rents generated by retransmission will be redistributed from cable operators to broadcasters.

[5]See Robert Rubinovitz, "Market Power and Price Increases of Basic Cable Service Since Deregulation," Department of Justice, Economic Analysis Group (EAG 91-8), August 6, 1991. See also Department of Justice *Comments* filed in MM Docket 89-600. Alternative explanations for cable's high q ratio — other than monopoly power — are explored and generally rejected in Shooshan & Jackson Inc. (1987 and 1988), and in Paul W. MacAvoy (April 2, 1990).

In assessing the efficacy of alternative approaches to control of cable monopoly power, it is important to distinguish between objectives and processes. The Commission is apparently and, in our view, justifiably skeptical about the efficacy of traditional cost-of-service regulation as a useful administrative *process* for controlling cable monopoly power. It is, however, important to recognize and understand that minimum cost of production or service *is*, in fact, the appropriate benchmark for regulation. The objective the Commission has properly set for its efforts in this matter, and which regulators engaged in this kind of effort have traditionally set for themselves, is replication of what an effective competitive process would produce, were competition feasible. The intellectual foundation for minimum cost of service as a regulatory benchmark is that, in an effectively competitive market, equilibrium prices will equal minimum costs of production. The economic rationale for "cost-based" pricing is that it promotes economic efficiency and maximizes consumer welfare.

In the absence of an effectively competitive process for discovery of efficient prices and costs, regulators have historically utilized various kinds of administrative processes to determine costs and set prices. The Commission notes that, on the telecommunications side, it has determined that the traditional cost-of-service approach to regulation suffers from serious infirmities and that incentive or price-cap regulation is better able to produce efficient outcomes. To provide telephone companies with greater incentives to be efficient, the Commission has relaxed the tie between prices and costs. Note, however, that the logic of price caps is not that prices should not reflect minimum costs of production at the margin, but that the price-cap approach is a better process than rate-base/rate-of-return regulation for discovering what efficient methods of production actually are and ensuring that prices and costs are efficient.[6] To the extent that the goal of regulation *is* economic efficiency as conventionally defined, how closely prices conform to minimum costs of service *is* the economically appropriate benchmark for judging the efficacy of alternative approaches to regulation. The operational question is what kind of administrative process performs best, consistent with the resource constraints the Commission confronts. Thus, traditional cost-of-service regulation may well be a terrible way to ensure that rates actually reflect minimum

[6]It is also important to note that, in contrast to cable, rates of the telephone companies were already being regulated prior to capping and, in the case of AT&T, there were competitive suppliers offering price-discounted services.

costs of service and "benchmarking" rises or falls on its ability to approximate and produce efficient prices and costs.

A. RATE-BASED BENCHMARKS

Under a rate-based approach, the Commission would avoid problems of cost measurement or estimation simply by focusing on rates. Since the goal of regulation is to mimic competitive market performance, if there were a sufficiently diverse sample of cable markets in which there was (truly) effective competition, the Commission might be able to map rates charged in the sample markets either directly or via some extrapolation procedure into monopoly markets with comparable characteristics.[7] The feasibility of this approach turns critically on the actual existence of a sufficiently diverse sample of markets in which (truly) effective competition prevails to permit a close mapping or extrapolation. Since cable television service is in most instances provided on a monopoly basis, we question whether such a sample exists. There are a few markets where there is more than one cable television system (or other multichannel video programming delivery system) operating, but whether, or the extent to which, *effective* competition may be postulated to exist in those markets remains to be determined. Even if one adopts the Cable Act's definition of "effective competition," it still remains unclear whether an adequate sample of "competitive" (by definition) markets exists.

Attempts to map or extrapolate rates from a sparse sample will be prone to error. Unless the full range of diverse circumstances in monopoly markets is covered in a competitive sample, estimation of competitive rates will entail statistically invalid extrapolations beyond the bounds from within which sample observations are drawn. To the extent that there are sample deficiencies and significant cost and service differences exist among different types of system (*viz.*, large versus small channel capacity, aerial versus buried plant, multiple-

[7]Alternatively, rates charged in monopoly markets might somehow be discounted by a factor designed to remove monopoly overcharges. How the Commission would determine an appropriate discount factor, whose application would produce correct results in diverse settings, is unclear. A related approach, which is suggested in the Commission's *Notice*, would attempt to update rates that could be defended as reasonable at some previous time *(viz.*, before monopoly power was exercised) to produce a benchmark for currently reasonable rates. It is not clear that cable rates have ever been effectively competitive, even prior to the 1984 Cable Act. How the Commission would determine an appropriate inflation factor and make appropriate adjustments for changes in costs and in the composition and quality of different services is also unclear. Our view is that serious attempts to operationalize these kinds of approaches would reveal that their implementation requires as much and probably more information as other, more economic solutions.

system versus independent ownership, vertically integrated versus nonvertically integrated corporate organization, etc.), estimates of competitive rates will be biased.

There may also be opportunities to game a rate-based benchmark based on a limited sample. Strategically motivated price increases in "competitive" sample markets could permit higher prices to be charged in other markets. A large multiple system operator might acquire a system or systems in the competitive sample markets and raise prices strategically to increase the benchmark. Any revenue losses in "competitive" markets might be more than offset by revenue gains in noncompetitive markets where higher rates could be charged as a result of a skewed (i.e., strategically manipulated) rate benchmark. There may also be opportunities and incentives to game this type of benchmark by degrading service quality, a general problem we address more fully below.

B. COST-BASED BENCHMARKS

There are two critical questions to be addressed in considering the efficacy of cost-based benchmarking:

(1) Can econometric models be estimated that will produce reasonably accurate estimates of costs on the basis of minimal amounts of input data?[8]

(2) Can this approach be implemented in a way that minimizes incentives and opportunities to evade regulatory constraints?

Based on previous modeling efforts, we believe the Commission can develop a reasonable and economical benchmark model for estimation of costs for capital inputs. Previous estimates of cable system replacement costs point to a number of relevant system characteristics the Commission might productively employ.[9] These include: converter addressability, plant cost per mile, and the relative amounts of aerial and buried plant. The Commission may well be able to identify other useful summary inputs for purposes of differentiating systems on the basis of capital cost differences.

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[8]Suppose, for illustration, that one could very closely approximate actual costs on the basis of a single number, say, system size. Benchmarking in this case makes good sense. A single bit of information permits a close approximation. Perhaps one might produce a more accurate measurement of actual costs by taking more trouble, but it is doubtful whether what would be gained would be worth more than what would be lost. Given a binding resource constraint, benchmarking costs would provide an economical procedure under the favorable circumstances assumed in this example.

[9]See Shooshan & Jackson Inc. (1987), *op. cit.*

Because we believe accurate cost benchmarks can be developed for capital inputs, we believe that incentives to game rates based, in part, on such benchmark estimates would be minimal. Benchmarking for variable input costs is a different story. Because there is such great "variability" in the basic-service tiers and customer services that different systems offer, as well as in the amounts of different variable inputs employed, we believe it would be difficult and costly to develop a *simple* benchmark that accurately tracks noncapital costs. Costs for variable inputs vary according to the quantity and quality of the inputs deployed. A basic-tier offering that contains a large number of program services and services of higher cost and quality will cost more to supply than one with fewer of each. Cable operators who offer consumers excellent customer service presumably incur higher costs than operators who supply inferior service. Benchmarks which fail to account for important differences will produce mismeasurements and provide incentives for gaming behavior designed to evade regulatory restraints. Gaming of a variable-cost benchmark would pose serious problems and could, as we subsequently show, result in performance losses that would make previous expressions of consumer dissatisfaction about cable service pale by comparison.

The Commission has expressed concern about maintenance of incentives for network expansion and improvement of service under regulation. As long as the Commission adopts a method of regulation that provides for reasonably accurate measurement and permits efficient recovery of relevant costs, it need not be concerned on this score. The Commission should recognize that there are two types of error it might make in the instant circumstances. It might set standards that are so strict that firms are discouraged from investing — the concern the Commission has expressed.[10] Alternatively, it might adopt practices which permit cable operators to earn monopoly profits at the expense of the rate-paying (not to mention tax-paying) public. In this regard, we note that cable systems are frequently traded and that the

[10]The Commission repeatedly mentions the possibility of recourse to traditional cost-of-service showings as a means for cable operators to avoid confiscatory benchmark rates. Given the infirmities of cost-of-service regulation, which the Commission notes and has frequently remarked in the recent past, it is unclear to us why the Commission apparently thinks a cost-of-service showing supplies an appropriate backstop safeguard. Moreover, if a cost-of-service showing is deemed adequate to overcome a presumption of benchmark-rate reasonableness, it is unclear why this avenue of relief should be afforded only to system operators. Should not consumers, whom the Cable Act is designed to protect, be able to show that a cable operator's cost of service is lower than the benchmark as a basis for reducing that operator's rates? The Commission's asymmetrical concern (or, at least, asymmetrical expressions of concern) for the welfare of cable operators, as against consumers, is troubling and is at odds with the balance struck by Congress.

prices at which systems trade reflect the market's valuation of the discounted present value of expected future earnings, *including any monopoly rents*. Use of data infected by the presence of monopoly rents to estimate legitimately recoverable capital costs would permit operators to charge monopoly rates and, thereby, evade the intent of the statute.[11]

C. VARIABLE COSTS AND THE PROBLEM OF GAMING

It is important in evaluating any system of regulation to analyze what the response of regulated firms is likely to be to particular constraints or incentives. A regulatory scheme that sets rates on the basis of costs may give regulated firms an incentive to incur costs and its efficacy may then turn critically on the regulator's ability to gauge the prudence of the regulated firms' behavior in incurring costs.[12] A regulatory scheme that caps rates may give regulated firms an incentive to reduce costs and its efficacy may then turn critically on the regulator's ability to gauge the prudence of the regulated firms' behavior in reducing costs.[13] Since most regulatory schemes embody some combination of these approaches, the regulator is thus well advised to be on the lookout for attempts both to inflate costs and to cut quality.

In economic terms, the "short run" is defined as a period of time within which it is not practicable to vary all productive inputs and costs of production. Some inputs and their associated costs are "fixed" in the economic short run. Other inputs may be varied and their costs are obviously "variable." We believe this difference provides a useful analytical distinction for purposes of fashioning an effective regulatory scheme for cable. In particular, we think, for purposes of preventing evasion of regulation through gaming, it makes sense to benchmark costs of nonvariable inputs (e.g., capital inputs), while permitting recovery of actual (prudently incurred) costs of variable inputs (e.g., programming costs, customer service costs). Capital-cost benchmarking is relatively simple, while gaming through degradation of

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[11]Monopoly rents clearly are not a cost of network maintenance or expansion in the future. Their recovery should, therefore, not be a concern from the standpoint of maintaining adequate investment incentives under regulation.

[12]Thus, the standard criticism of rate-base, rate-of-return regulation is that regulators can never know enough to be in a position to effectively second-guess the regulated firm's management.

[13]The fear that is often expressed about price-cap regulation is that the regulated firm may have incentives to cut service quality unduly in a effort to increase profitability. Whether price caps would actually have that effect depends, *inter alia*, on whether reductions in service quality increase or reduce profitability which may, in turn and in part, depend upon the existence of competitive alternatives to the regulated firm's offerings.

capital inputs would be relatively difficult. Variable-cost benchmarking is relatively difficult, while gaming through reductions in variable inputs would be relatively easy.

The conventional method for gaming a price constraint is "to shrink the candy bar" — to maintain a profit margin by reducing quality and costs. For fixed inputs (e.g., the network itself), that is hard (although certainly not impossible) to do precisely because costs are fixed rather than variable.[14] Variable inputs obviously can be varied, so these are naturally the factors that price-constrained firms would try to cut were there incentives to do so. Attractive program services might be removed from an effectively price-constrained tier and perhaps replaced with less desired fare. Customer service staffing might be reduced.

Regulations that seek to guarantee or require particular levels of service quality are more likely to succeed to the extent that operator incentives are consistent with, rather than at odds with, the purpose of the regulations. The Commission implicitly recognizes the problem of the shrinking candy bar, noting that the benchmark formula for pricing of a basic-service tier might well need to permit pricing variations depending on the number of signals included on the tier. If a sufficiently flexible formula were not adopted and an average rate were imposed, the basic-service tiers of systems with above-average program quality (and costs) would deteriorate and systems with below-average basic-service tiers would make out. There would be strong incentives to substitute low-quality programming for higher-quality programming. The same would be true of customer service efforts. If systems cannot anticipate recovery of their costs of providing service, they will cut service. There will be greater delays in responses to customer complaints and requests for information. There will be longer lead times required in scheduling customer service calls. While the 1992 Cable Act requires regulation of customer service, such regulation is unlikely to preclude all opportunities for gaming of this kind, especially since these regulations are themselves likely to be benchmarks. Simply providing for some degree of flexibility in setting the benchmark does not solve the problem. That may merely supply opportunities for evasion through gaming

[14]The problem of network degradation may not be a serious problem. In the short run, opportunities to reduce quality are limited because, as noted above, inputs are fixed. Moreover, the 1992 Cable Act charges the Commission with regulating service quality. In the long run, the evolution and threat of competition may weaken or eviscerate incentives to degrade network quality. In addition, there may be other incentives operating to improve network quality. For example, the introduction of fiber in the "backbone" of a cable system expands capacity, lowers costs and improves quality. Entry into different lines of business (e.g., voice telephony) will require network improvements.

behavior. Suppose a per-channel formula is adopted. A system operator might game this kind of formula simply by "expanding the quality" (i.e., *lowering* the quality) of the basic-service tier — adding low-cost, low-quality program services.

Presently we describe a hybrid regulatory system that can help mitigate incentives for quality degradation as a means of circumventing regulation. Before presenting the details of that approach, we briefly note the kinds of difficulties that construction of a cost benchmark for variable inputs poses. The dimensions and contents of basic-service tiers vary significantly. The pricing of substitute and complementary service offerings in different systems also varies substantially. The prices different program services charge to different cable companies apparently vary. The quality and costs of production of different program services vary. The quality and costs of providing customer service vary across systems and regions. All of this variability suggests to us that it would be easier simply to measure variable costs directly on a local basis. A good benchmark would, in the event, end up closely resembling direct measurement of relevant costs. A bad benchmark will provide incentives for service degradation.

III. AN OPTIMAL HYBRID APPROACH

Under a benchmark approach, the rates the regulated firm can charge depend on industry averages or perhaps different kinds of engineering cost input data. The important point is that rates do *not* depend on the firm's actual costs. For this reason, benchmark regulation lacks the cost-plus character of traditional rate-base, rate-of-return regulation and resembles price-cap regulation. As with price caps, there are strong incentives to improve efficiency. Where it can be feasibly utilized, it is also easy to administer — an especially important consideration for cable regulation, since cable companies are so numerous.

Unfortunately, benchmark regulation also shares the primary potential drawback of price caps — it provides incentives to degrade quality. In fact, this potential drawback is much more serious for cable than telephony because the quality of cable service can be much more easily degraded. The quality of cable service can be degraded simply by reducing expenditures on programming and other variable inputs. Consequently, under benchmark regulation, the quality of cable service would predictably decline to a substantial degree.

Cable companies would have both the ability and incentive to degrade quality and there would be little the Commission could do to stop them.

Because of concern over the gaming problem, we propose that the Commission adopt a hybrid scheme of cable regulation that captures many of the administrative cost savings associated with a benchmark approach, but avoids the pitfalls of benchmarking where they are likely to be most debilitating.[15] We recommend benchmark regulation of capital costs, where there are few opportunities to profitably degrade service quality and would be little incentive given the (good) prospects for development of an accurate benchmark. Benchmark regulation of capital costs would provide strong incentives to improve efficiency and it can be feasibly and economically administered by the Commission and local governmental bodies. We recommend allowing cable companies to recover their *actual* noncapital costs. This would avoid the most serious incentives to degrade quality — i.e., in program acquisition and customer service. It would, at the same time, not entail any great sacrifice in terms of foregone administrative cost savings because there would be little difference in practice between development and use of an effective benchmark and actual measurement of variable costs.

A. Implementation of Hybrid Proposal: Capital Costs

To develop a benchmark for capital costs, the Commission must first choose a cost standard and then establish benchmarks for the amount of capital and the cost per unit of capital. Replacement cost provides a theoretically relevant cost standard that can be practically implemented.[16] To implement the replacement-cost standard, the Commission would define different categories of cable systems and establish benchmarks for replacement costs of cable systems in each category. The basic task is to determine how much it would cost to replace existing plant with new plant that could perform the same functions. Downward

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[15]Our hybrid proposal is similar to the individual system cost-based alternative described by the Commission in paragraphs 53-56 of its *Notice*. In contrast to the scheme described by the Commission, our approach would rely on benchmark estimates of capital costs and use a simple cost allocator based on the proportion of basic channels.

[16]The 1987 Shooshan & Jackson study estimated replacement costs of cable systems by taking the book value of the firm's total tangible assets, and adding the difference between the replacement cost and book value of the firm's net plant, which was estimated using engineering analysis. A similar approach was taken in the 1988 Shooshan & Jackson update. The 1990 MacAvoy study used two approaches to estimate the replacement costs for cable systems. The first approach used a weighted average of the adjusted book values for a sample of cable companies. The second approach used actual cable construction expenditures to estimate the replacement cost on a per-subscriber basis.

adjustments should then be made to reflect three relevant considerations: (1) embedded plant will not last as long as newly-installed plant; (2) newly-installed plant will generally have more revenue-producing potential (e.g., additional bandwidth); and (3) newly-installed plant will be less costly to maintain.

A benchmark for the amount of capital should be based on statistical analysis of relevant economic and engineering data. Benchmarks should be developed for multiple categories defined in terms of factors that significantly affect capital costs (e.g., number of channels, whether the system has addressable converters, amount of fiber, whether cable is aerial or buried, etc.). The unit cost of capital consists of depreciation, return on capital (including interest and return to equity) and taxes. The appropriate depreciation rate is the expected decline in the *real* replacement cost of the plant. The depreciation rate should reflect technological obsolescence as well as physical deterioration. The appropriate return on capital for replacement cost regulation is the *real* cost of capital. This equals the nominal cost of capital less the expected inflation rate. Taxes must also be factored into the benchmark for capital costs. The adjustment for taxes should be proportional to the return on equity, based on the benchmark debt-equity ratio.

Given relevant system characteristics, application of these benchmarks will produce a measure of recoverable capital costs. What portion of these costs should be recovered in the rates paid for a basic-service tier? We recommend that such costs be allocated proportional to the number of basic-tier channels [i.e., the fraction (f) of these costs allocated to basic service should be the number of basic channels divided by the number of basic and nonbasic channels]. This method of allocating costs is not ideal, but it is reasonable, defensible and easy to administer.

B. Implementation of Hybrid Proposal: Noncapital Costs

Under this proposal, cable system operators are entitled to recover a portion of their benchmarked capital costs as well as their actual noncapital costs. Cable operators would thus need to submit relevant data on their noncapital costs to local regulatory authorities.

Cable companies would need to provide the following information on an annual basis:

1. Costs

Program licensing fees (basic)

Total expenses apart from licensing fees, depreciation, taxes and interest

2. SIZE
   Yearly average number of basic subscribers
   Yearly average number of basic channels
   Yearly average number of nonbasic channels

3. SYSTEM CHARACTERISTICS
   Those identified by FCC for benchmarking capital costs.

This modest set of data requirements could be easily provided by cable companies and easily monitored by local cable regulatory authorities.[17] Calculating cable rates from the preceding data is completely straightforward. The basic-service-tier rate cap is calculated simply as the sum of basic-service program license fees, other expenses and the fraction (f) of benchmark capital costs attributed to basic service divided by the number of subscribers.[18]

An Example[19]

To illustrate how this approach would work in practice, we calculate a basic-service rate based on some rough-cut, average statistics. Results in any particular circumstance would obviously depend on the particulars of that circumstance, but this example illustrates

[17]We recognize that vertically-integrated firms (i.e., firms that own both cable companies and program services) could theoretically take advantage of this method of recovering noncapital costs by simply raising the rates their program services charge their cable companies. However, it is reasonable to expect that such conduct would be detected by the regulators who can compare the price information that is disclosed by various systems. If a TCI or Time Warner cable system is reporting substantially higher costs for CNN, for example, than those reported by a similarly situated "independent" cable system, the practice should be apparent.

[18]Formally,

$$r = \frac{C + E + f(K)}{n}$$

where

- r = basic-tier rate,
- C = program license fees (basic),
- E = total expenses apart from licensing fees, depreciation, taxes and interest,
- K = benchmark capital cost,
- f = ratio of yearly average number of basic channels to sum of yearly average number of basic and nonbasic channels, and
- n = yearly average number of basic subscribers.

We make no assumption regarding the treatment and disposition of revenues from advertising or other sources.

[19]Underlying calculations are supplied in a Technical Appendix which appears at the end of this paper.

the fundamental issues. We estimate average monthly capital expenses of $2.79[20] and monthly noncapital expenses of $1.73 per month for basic services,[21] for a total of approximately $4.52 per month. This compares with the price of $10.00 TCI recently announced for a new basic tier which includes only basic broadcast services, local access programming and public education services.[22] Our estimate thus suggests that were TCI's costs comparable to these averages and were it subject to effective competition, it would offer its new basic tier for about $5.50 less or, alternatively, offer customers $5.50 more in better programming or service. In our sample, estimated basic-service rates/costs ranged from $3.48 to $7.35. TCI's proposed rate would be less or more reasonable depending on whether its costs fall below or above average.

IV. CONCLUSION

Economical cable rate regulation need not mean ineffective regulation, but to produce good outcomes the Commission needs to exercise care in how it economizes on scarce enforcement resources. While competitive rate-based benchmarks provide an attractive solution in theory, we seriously doubt their feasibility in practice given the highly limited extent of effective competition in the marketplace. Moreover, this kind of benchmark is easily gamed and regulation thereby effectively evaded. We believe capital-cost benchmarking is feasible, can be cost-effectively implemented and would avoid many of the pitfalls of

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[20]We estimate capital costs per subscriber by dividing industry new-build expenditures by new homes passed, and then dividing by an assumed 60 percent subscriber penetration (the approximate industry average). Cost of converters and drop and installation costs are not included in this estimate because they are not to be recovered through basic rates. An estimate of depreciation is then applied to yield an estimate of net plant. We use a factor of 0.61 to estimate approximately three years of depreciation at 15 percent per year. Annual capital costs are then derived based upon this amount by totalling annual depreciation (15 percent), annual return to capital (nominal return to capital less inflation, 8 percent), and annual taxes (1 percent, reflecting the highly-leveraged nature of the cable industry). For purposes of this example, it is estimated that 40 percent of total channels are basic; i.e., $f = 0.4$. This yields an estimated monthly per-subscriber capital cost of $2.79.

[21]For sake of simplicity, we assume that basic programming costs are 40 percent of total programming costs. It then follows 40 percent of all noncapital costs, including programming, are allocated to basic. Total noncapital costs can be estimated using data from a subset of relatively "pure" cable companies, i.e., companies whose business is almost entirely cable television. Companies used for this example include: Adelphia, Comcast/Philadelphia L.P., Falcon Cable, and TCA Cable. This sample yields a representative industry average of expenses on cable operations, estimated by the total of operating expenses and sales/administration expenses. (Application to individual diversified cable companies requires that expenses specific to cable operations be identified.)

[22]See *Broadcasting* (January 18, 1993), p. 8.

traditional cost-of-service regulation while promoting improvements in efficiency. Accurate cost benchmarks for noncapital costs would, in our view, resemble actual cost-of-service measurements. Simple benchmarks are infeasible and we believe the use of simple benchmarks would inevitably lead to significant distortions of service — distortions which would provoke justified consumer complaints and unwanted headaches for responsible local and federal government officials.

We recommend that the Commission adopt a hybrid approach, one that melds the best features of alternative methods of regulation and, in practice, will produce efficient results. A regulatory scheme that benchmarks capital costs and, in so doing, avoids a variety of thorny conceptual and administrative difficulties, would save scarce regulatory resources and produce efficient results. In contrast, simple benchmarks for noncapital costs that produce accurate estimates are infeasible. More complex benchmarks might be developed, but these would likely end up resembling direct measurement of costs. Since noncapital costs are comparatively easy to measure and since gaming for purposes of evasion is a distinct possibility when it comes to variable inputs, we think the Commission would be well advised simply to allow for recovery of actual noncapital expenses.

Under the approach we recommend, we would anticipate that consumers will confront lower prices for basic-tier offerings, that system operators will have the ability to recover relevant costs and will, consequently, possess adequate incentives for investment, and that opportunities and incentives for distortions of service will be minimized as will the likelihood of consumer complaints.

Technical Appendix

CALCULATION OF "AVERAGE" BASIC RATE

I. Estimate of Non-Capital Costs

	Annual Operating Expense	Annual Sales/Admin Expense	Annual Total Expense	Basic Portion (est 40%)	Basic Subs (000)	Monthly Per-Sub Expense
	($M)					($)
Adelphia	66.01	41.12	107.13	42.85	1149	3.11
Comcast/Philadelphia	36.54	15.53	52.07	20.83	2509	0.69
Falcon	38.58	n/a	38.58	15.43	892	1.44
TCA Cable	51.69	10.01	61.70	24.68	451	4.56
Total					5001	
Weighted ave.						1.73

II. Estimate of Capital Costs

Cable Construction Costs (1991)

New-Build Expenditures ($M)	651.00
New Homes Passed (M)	1.90
$ Per Homes Passed	342.63
$ Per Sub (60% penetration)	571.05
Gross Plant ($)	571.05
Net Plant (Gross Plant *.61)	348.34
Annual depr (15%)	52.25
Annual ret to cap. (8%)	27.87
Annual taxes (1%)	3.48
Total Annual Cap Expenses ($)	83.60
Basic Annual Cap Expenses (est 40%) ($)	33.44
Basic Monthly Cap Expenses ($)	2.79

III. Estimate of Total Costs

Wtd. Ave. Basic Monthly Op. & Cap Exp. ($)	4.52
Min. Basic Monthly Op. & Cap Exp. ($)	3.48
Max. Basic Monthly Op. & Cap Exp. ($)	7.35

Sources:
Operating Expenses: The Cable TV Financial Databook, June 1992 (p. 58)
Basic subscribers: The Cable TV Finanicial Databook, June 1992 (pp.16-35)
New-Build Expenditures: The Cable TV Financial Databook, June 1992 (p. 9)
New Homes Passed: The Cable TV Financial Databook, June 1992 (p.9)
Percent of expenses attributable to basic service, subscribership of homes passed, and annual depreciation, return to capital, and annual tax rates are estimates.